REMARKS

Applicant has reviewed the Office Action mailed on October 1, 2004 as well as the art cited. Claims 2-12 are pending in this application.

Rejections Under 35 U.S.C. § 103

Claims 2-12 were rejected under 35 USC § 103(a) as being unpatentable over Thompson et al. (U.S. Patent No. 5,594,726) in view of Clark et al. (U.S. Patent No. 3,742,145). Applicant respectfully traverses these rejections.

The Examiner states that

> "Thomspon, et al disclose all subject matter, note paragraph 2 of the office action dated January 21, 2004, *except expressly stating that each subband including a plurality of payload channels and at least one control channel.* The Examiner takes official notice that each subband including a plurality of payload channels and at least one control channel is well known in the art. Clark et al is evidence that it is at least 32 years old and not invented by applicants. Hence it would have been very obvious, and even expected, at the time the claimed invention was made to one of ordinary skill in the ar[e]t to incorporate the 32 year old and well known use of each subband including a plurality of payload channels and at least one control channel in the head end of Thompson et al in order to increase bandwidth and control traffic channels."

In the office action dated January 21, 2004, paragraph 2, the Examiner states that

> "Thompson, et al discloses a head end (figure 2) comprising at least one modem (figures 4 and 5, #48, 62) for communication with service units (figure 6) over a transmission bandwidth (figures 3A-3C). The transmission bandwidth (figures 3A-3C) divided it to a number of subbands (figure 3C). Each of the subbands (figure 3C) including a plurality of control channels and at least one control channel. A control unit (#42, 66), communicably coupled with at the at least one modem (#48, 62), that assigns each service unit (figure 6) to a subband (figures 3A-3C) such that the service units are "substantially" evenly distributed over the subbands (figure 3)."

Claim 2

Claim 2 is directed to a head end. The head end includes at least one modem for communicating with service units over a transmission bandwidth, the transmission bandwidth being divided into a number of subbands, each subband including a plurality of payload channels and at least one control channel and a control circuit, communicatively coupled with the at least one modem, that assigns each service unit to a subband such that the service units are substantially evenly distributed over the subbands.

Claim 3

Claim 3 is directed to a head end. The head end includes at least one modem for communicating with service units over a transmission bandwidth, the transmission bandwidth being divided into a number of subbands, each subband including a plurality of payload channels and at least one control channel and a control circuit, communicatively coupled with the at least one modem, that assigns each service unit to a subband such that the load of the service units is substantially evenly distributed over the subbands.

Claim 8

Claim 8 is directed to a head end. The head end includes at least one modem for communicating with service units over a transmission bandwidth, the transmission bandwidth being divided into a number of subbands, each subband including a plurality of payload channels and at least one control channel and a control circuit, communicatively coupled with the at least one modem, that assigns each service unit to a subband such that the service units are substantially evenly distributed over the subbands. Each subband includes a number of payload channels that transmit data at a first rate and a control channel that transmits data at a second rate, the second rate being slower than the first rate.

Neither reference alone or in combination teaches or suggests the head end of independent claims 2, 3, and 8. In particular, the Examiner refers to a head end of figure 2, but figure 2 does not contain a headend as asserted by the Examiner but instead an implementation of the broadband communication system configured as an extension to a telephony network (Col. 11, lines 40-43). Figure 1 indicates a headend 14 but does not include a modem. The Examiner

relies on the modulator 48 of input interface 32 (See figure 4) and the demodulator 62 of output interface 34 (See figure 5) for support of a modem. Neither the modulator 48 nor the demodulator 62 reside within headend 14. As a result, Thompson et al does not teach or suggest a headend including at least one modem as found in claims 2, 3, and 8.

The Examiner asserts that Thompson et al discloses a control unit (#42, 66) that assigns each service unit (figure 6) to a subband and further that the service units are "substantially" evenly distributed over the subbands. As Applicant noted in response to the January 21, 2004 office action, Thompson et al. does not teach or suggest a control circuit that assigns each service unit to a subband such that the service units are substantially evenly distributed over the subbands as found in claim 2 or a control circuit that assigns each service unit to a subband such that the load of the service units is substantially evenly distributed over the subbands as found in claim 3. Further, Thompson et al. does not teach or suggest a control circuit that assigns each service unit to a subband such that the service units are substantially evenly distributed over the subbands as found in claim 8. In contrast, Thompson et al. describes "optical interface 40" which "allows an addressing and control unit 42 *to decode and strip overhead and framing bits from the signal.*" and "the output of the tuner/demodulators 62 is 480 DS0 signals which are concentrated into groups of DS1 signals by a group of multiplexers 64 under the control of addressing and control unit 66." and "the addressing and control unit 66 adds the necessary control information in the optical transmitter 70 before communicating the digital DS1 signals in an optical format." Addressing and control unit 42 and addressing and control unit 66 are not part of a head end such as head end 14 and furthermore do not assign each service unit to a subband or assign each service unit to a subband such that the service units are substantially evenly distributed over the subbands or such that the load of the service units is substantially evenly distributed over subbands as found in claims 2, 3, or 8. There is no discussion in Thompson et al. of distributing service units over subbands or assigning service units to subbands as found in claims 2, 3, and 8.

The Examiner correctly states that Thompson et al does not teach or suggest each subband including a plurality of payload channels and at least one control channel as found in claims 2, 3, and 8. The Examiner relies on Clark et al. for this limitation and takes Official Notice that having each subband including a plurality of channels and at least one control

channel is well known in the art. The Applicant respectfully traverses these assertions and does not find support for the Examiner's assertions. The Examiner has provided no indication as to what are "the subbands" nor what are "the payload channels" and what are "the control channels" in Clark et al. Clark et al does not refer to subbands and payload channels as found in claims 2-12. Without clear indication of what the Examiner is proposing as subbands, payload channels and control channels of Clark et al there is no basis for a rejection or the taking of official notice based on Clark et al.

Neither reference provides a suggestion or a motivation to modify Thompson et al. with the asynchronous time division multiplexer and demultiplexer of Clark et al. or to otherwise combine the references. Further, the Applicant finds no likelihood of success of combining the frequency agile broadband communications system of Thompson et al. with the asynchronous time division multiplexer and demultiplexer of Clark et al. In particular, what asynchronous data groups of Thompson et al are going to be input into the asynchronous time division multiplexer and demultiplexer of Clark et al? How does the clock recovery circuits of Clark et al. interface with the clock recovery circuit of Thompson et al?

Neither reference alone or in combination teaches or suggests each subband includes a number of payload channels that transmit data at a first rate and a control channel that transmits data at a second rate, the second rate being slower than the first rate as found in claim 8. As indicated above neither Thompson nor Clark alone or in combination teach or suggest the each subband including a number of payload channels and a control channel. Further, there is no discussion of payload channels that transmit data a first rate and a control channel that transmits data at a second rate. And resultantly, no discussion of the second rate being slower than the first rate. In particular, the Examiner does not address these limitations of claim 8. As a result, claim 8 is allowable over the cited art.

Applicant finds that the Examiner has not established a prima facie case of obviousness as Thompson et al. alone or in combination with Clark et al. do not teach or suggest the head end of claims 2, 3, or 8 for the reasons provided above.

Claims 4-7 depend from and further define allowable claim 3 and for at least the reasons provided above, should also be allowed. Since the Applicant believes, Claims 4-7 are allowable for the above reasons. Applicant may not have put forth responses to additional rejections to said

claims at this time. However, the Applicant reserves the right to address said additional rejections to said claims if a further response is required.

Claims 9-12 depend from and further define allowable claim 8 and for at least the reasons provided above, should also be allowed. Since the Applicant believes, Claims 9-12 are allowable for the above reasons. Applicant may not have put forth responses to additional rejections to said claims at this time. However, the Applicant reserves the right to address said additional rejections to said claims if a further response is required.

CONCLUSION

Applicant respectfully submits that claims 2-12 are in condition for allowance and notification to that effect is earnestly requested. If necessary, please charge any additional fees or credit overpayments to Deposit Account No. 502432.

If the Examiner has any questions or concerns regarding this application, please contact the undersigned at (612) 332-4720.

Respectfully submitted,

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